REMARKS

Claims 1-12 are now pending, with claims 1, 3 and 12 being the independent claims. Claims 1, 3 and 12 have been amended. Support for the amendment to claims 1, 3 and 12 may be found, for example, at pg. 4, lines 30-33, at pg. 6, lines 10-13 and Fig. 3 of the originally filed specification. No new matter has been added. Reconsideration of the application, as amended, is respectfully requested.

Claims 1-12 were rejected under 35 U.S.C. §112, ¶2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In response to these rejections, Applicant has amended claims 1, 3 and 12 in a manner that is believed to address each specific rejection. Reconsideration and withdrawal of the rejections are therefore respectfully requested.

In the May 3, 2006 Office Action, independent claims 1, 3 and 12, and dependent claim 4 were rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,587,444 ("*Lenzo*"), while dependent claims 5-9 were rejected under 35 U.S.C. §103(a) as unpatentable over *Lenzo*. In addition, dependent claims 10 and 11 were rejected under 35 U.S.C. §103(a) as unpatentable over *Lenzo* in view of U.S. Patent No. 5,594,720 ("*Papadopoulos*"). For the following reasons, it is respectfully submitted that all claims of the present application are patentable over the cited references.

Independent claim 1 has been amended to recite, *inter alia*, the step of "receiving, at the central station that is configured to transmit and receive simultaneously, signals from said at least one substation during a second plurality of time slots at a second frequency, said second frequency being a different frequency than said first frequency and said signals of said at least one substation at said second frequency forming a time division multiple access signal". Independent claim 3 has been amended in a corresponding manner, wherein independent claim 3 has been amended to recite "wherein the central station is configured so as to simultaneously transmit a time division multiplex signal during a first plurality of time slots at a first frequency and receive a time division multiple access signal during a second plurality of time slots at a second frequency". Independent claim 12 has been amended to recite "wherein the apparatus is configured to transmit and receive simultaneously". Support for the amendments may be found, for example, at pg. 4, lines 30-33, at pg. 6, lines 10-13 and Fig. 3 of the originally filed specification. No new matter has been added.

Lenzo relates to a system that utilizes a mixed, or hybrid, division duplex mechanism such that the uplink and downlink transmissions are separated in frequency, while time slots associated with transmission and reception are also separated in time (see col. 2, lines 6-10).

Lenzo (col. 4, lines 41-45) teaches hybrid, frequency-time division duplex (FTDD), conventional time-division duplex (TDD) and frequency-division duplex (FDD) schemes are implemented to enable the production of base stations that can be programmed for use in either TDD or FDD networks. *Lenzo* (Abstract, lines 11-14) states, "data from the base to the terminals is sent on the first carrier during a first half of the frame, and data from the terminals to the base is sent on the second carrier during the remaining half of the frame". However, *Lenzo* teaches a system in which the base station transmits data only half of the time and receives data the remaining half of the time, i.e. a system in which the frame structure is fixed (see, e.g., col. 4, lines 56-61). As a result, in FDD half of the system capacity is wasted when it operates in the FDD mode.

Lenzo (Abstract, lines 18-19) states "an additional, complimentary base station, constructed to transmit when the first base station is receiving and vice versa, can be co-located with the first base station to provide full time and spectral efficiency within a coverage area serviced by the base stations". *Lenzo* thus teaches that another base station (operating on the same frequency of the other base station) is used to complement the first base station by reversing the periods that data is transmitted and received.

In contrast, the claimed invention is directed to avoiding the need for an individual remote terminal that is used within an FDD system to transmit and receive simultaneously, while enabling a base station to practically transmit and receive continuously. As a result, it becomes possible to construct a remote terminal inexpensively, while at the same time the full capacity of a cell becomes maintained.

The claimed invention arranges time slots (e.g., CONTROL, downlink (DL) and uplink (UL) so that a base station can transmit and receive "full-time", because typically several remote terminals are active at any one time, and it is possible to divide the time between these terminal so that the base station can utilize the entire capacity of an FDD system. Here, the arrangement of the time slots may be performed dynamically, as the need arises.

The claimed invention is patentable over *Lenzo*, because amended independent claim 1 is directed to solving a different problem than that which is solved by the cited art. *Lenzo* teaches a system where both the base station and mobile stations have a single transceiver. *Lenzo* (col. 2,

lines 45-54) teaches that the "base station is configured to transmit downlink communications signals to ... mobile stations via a first carrier frequency and to receive uplink communications signals from the mobile stations via a second carrier frequency, [where] the downlink and uplink communications signals [are] transmitted and received via successive time division multiple access frames, [and] each frame [includes] a plurality of time slots". *Lenzo* (col. 2, lines 54-60) teaches that for each active communications link (e.g., for each call) established between the base station and a mobile station, a first time slot within each frame is allocated for downlink communications and a second time slot within each frame is allocated for uplink communications, where the first and second allocated time slots are separated in time by a fixed time offset. *Lenzo* thus teaches that a frame is split into an uplink (UL) portion and a downlink (DL) portion, after which time slots are reserved with these UL and DL partitions. Here, the UL is on one frequency and the DL is on another frequency. Thus, *Lenzo* teaches an FDD system using a single transceiver, which is fundamentally impossible to achieve in Applicant's claimed invention (see col. 4, line 67 thru col. 5, line 4; also see claims 4 and 5 where a limitation of shared components is recited). However, the UL and DL of *Lenzo* do not occur at the same moment in time. *Lenzo* teaches that the UL and DL are separated in time by a fixed time offset. Consequently, they do not overlap, i.e., the UL and the DL do not occur simultaneously. *Lenzo* thus fails to teach anything with respect to the step of "receiving signals, at a central station that is configured to transmit and receive simultaneously," as recited in amended independent claim 1. In view of the foregoing, amended independent claim 1 is patentable over *Lenzo* and thus, reconsideration and withdrawal of the rejection under 35 U.S.C §102(e) are in order, and a notice to that effect is solicited.

The Examiner (Office Action, pg. 7) acknowledges *Lenzo* differs from the claimed invention in that *Lenzo* fails to teach or suggest "uplink and downlink time slots allocated according to traffic needs". *Papadopoulos* has been cited by the Examiner to cure this deficiency of *Lenzo*. *Papadopoulos* relates to an apparatus and method for reducing co-channel interference in multiple-access cellular communication systems in which frame time or frequency slots are allocated between the uplink and downlink (see Abstract). However, *Papadopoulos* fails to cure the deficiencies of *Lenzo*.

Papadopoulis (Abstract, lines 6-9) states, "the frame slots in which the antennas communicate uplink and downlink information are arranged in accordance with a predetermined

frame organization to reduce mixed co-channel interference (CCI)". *Papadopoulis* thus teaches the simple concept of synchronizing adjacent TDD cells in order to avoid inter-cell interference. Consequently, *Papadopoulis* teaches that eliminating inter-cell interference requires the transmission period of one base station to not overlap with the reception period of the neighboring base station. Such a feature is needed for all TDD cellular systems. However, reducing inter-cell interference has nothing to do with the claimed invention. *Papadopoulis* thus fails to teach or suggest the claimed invention, since *Papadopoulis* addresses an entirely different problem (i.e., inter-cell interference in a different type of system, i.e., a TDD, and provides a trivial solution, i.e. synchronization of neighboring base stations to avoid the inter-cell interference. *Papadopoulos* thus fails to cure the deficiencies of *Lenzo*.

Naturally, a skilled person in the art of the claimed invention would appreciate that the system taught in *Lenzo* could be modified based on the fundamental teachings of *Papadopoulis*, for example, that the partitioning between the UL and DL can be changed. Indeed, *Papadopoulis* (Fig. 7) teaches that shared slots (720) can use essentially all timeslots because *Papadopoulis* discloses a TDD system but, thus, fails to include the simultaneous occurrence of the UL and DL , only the occurrence of sequentially arranged slots. However, the combination of *Lenzo* and *Papadopoulis* would provide nothing more than an FDD system having variable partitioning between the UL and the DL, where essentially all slots on the DL partition are used and all slots on the UL partition are used. *Lenzo* and *Papadopoulis* would achieve a system in which the UL and DL partition of this combination would never and can never overlap. The combination of *Lenzo* and *Papadopoulis* would thus fail to achieve a system in which reception of signals would occur, at a central station that is configured to transmit and receive simultaneously, as recited in amended independent claim 1.

Moreover, it is improper to combine the system taught in *Lenzo* with the system taught in *Papadopoulos*, because it is impossible for *Lenzo* to simultaneously use essentially all timeslots in both transmission directions during a frame. The claimed invention includes a separate receiver for the UL and DL so as to permit mobile stations to possess a single transceiver. As described at pg. 4, lines 30-33 of the specification, "the central station, in turn, includes a duplexer unit so it can both transmit and receive simultaneously when the transmission and reception frequencies are separate enough". As a result, amended independent claim 1 recites the step of "receiving, at the central station that is configured to transmit and receive simultaneously, signals from said at least one

enough". As a result, amended independent claim 1 recites the step of "receiving, at the central station that is configured to transmit and receive simultaneously, signals from said at least one substation during a second plurality of time slots at a second frequency, said second frequency being a different frequency than said first frequency and said signals of said at least one substation at said second frequency forming a time division multiple access signal". The combination of *Lenzo* and *Papadopoulis* fails to teach or suggest this limitation.

Papadopoulos teaches DL/UL partitioning of a frame, and subsequent adjustment of this partitioning to enable usage of all slots to thereby increase system capacity (see, e.g., col. 16, lines 1-3). In contrast, the claimed invention provides a fixed number of available timeslots on the DL and on the UL. In view of the foregoing, *Lenzo* and *Papadopoulos*, individually or in combination fail to achieve the invention recited in amended independent claim 1. Consequently, amended independent claim 1 is patentable and, thus reconsideration and withdrawal of the rejections under 35 U.S.C. §103(a) are in order, and a notice to this effect is requested.

Independent claims 3 and 12 are a system and apparatus claim, respectively, in which the method of claim 1 is implemented. Accordingly, independent claims 3 and 12 are patentable over the combination of *Lenzo* and *Papadopoulos* for the reasons discussed above with respect to independent method claim 1.

In view of the patentability of independent claims 1, 3 and 12, for the reasons set forth above, dependent claims 2 and 4-11 are all patentable over the prior art.

Based on the foregoing amendments and remarks, this application should be in condition for allowance. Early passage of this case to issue is requested.

Respectfully submitted,
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